REMARKS

Claims 10, 12, 13, 20 and 35 stand rejected under 35 U.S.C. §102(b) for anticipation by U.S. Patent No. 5,587,816 to Gunjima. Claims 11, 14, 15, 36, 37 and 39-41 stand rejected under 35 U.S.C. §103(a) for obviousness over the Gunjima patent in view of U.S. Patent No. 4,911,529 to Van De Ven. Applicants respectfully traverse these rejections for the following reasons.

The present invention is directed to an LCD display. The LCD display incorporates a light transmitting element having a surface with surface relief or texturing that eliminates or reduces reflections as required in claims 10-15. The LCD display may incorporate a sheet having a stepped or ramped surface which acts as a Fresnel refractor or reflector as set forth in claims 12 and 20. In that embodiment, the side having the Fresnel refractor or reflector surface is different from the side having surface relief or texturing that reduces reflection and light from the Fresnel surface. Claim 12 is amended to clarify that feature by use of the term "another". Claims 12 and 13 are amended for consistency with at least claims 14 and 20 in the description of the "stepped or ramped surface".

The Gunjima patent fails to disclose an LCD display as claimed. The illumination device of Gunjima includes an LCD as well as a prism. The device shown in Figs. 1-3 or 6 of the Gunjima patent includes an LCD (12 or 41) which is spaced apart from a prism (7 or 39). A light diffusing sheet (8 or 40) is positioned on the smooth side of the prisms. The prisms (7 or 39) are included in the arrangement to avoid total reflection within light guides (3 or 34).

Gunjima fails to disclose a light transmitting element that has a surface with surface relief or texturing that eliminates or reduces reflections as required by claims 10 and 20. Firstly, the LCD (12 or 41) of Gunjima does not incorporate a light transmitting element such as the prisms (7 or 39). The prisms in Gunjima are maintained distinct from the LCD. As such, the LCD display of Gunjima does not incorporate a light transmitting element having a surface with surface relief or texturing. To the extent that the prisms (7 or 39) of Gunjima have a Fresnel refracting arrangement, they then do not have another surface with surface relief or texturing. Claims 12 and 20 require that one surface of the sheet has a stepped or ramped Fresnel surface and the opposite surface has surface relief or texturing that reduces reflection of light from the other surface. Hence, the textured surface of claims 10

and 20 is not disclosed by the prism surfaces in Gunjima. Accordingly, claims 10, 12 and 20 define over the Gunjima patent.

Claims 13 and 35 require that the element of the LCD display has one surface which is stepped or ramped and partially light reflecting to form a Fresnel reflecting arrangement, along with another surface which contains surface relief or texturing. No such arrangement is disclosed in the Gunjima patent. To the extent that the prisms (7 or 39) of Gunjima form a Fresnel reflecting arrangement, there is no reflective or semi-reflective coating thereon nor any additional surface which includes surface relief or texturing to eliminate and reduce reflections. At most, Gunjima indicates that a Fresnel arrangement itself may reduce or avoid total reflection. Accordingly, claims 13 and 35 further define over the Gunjima patent.

Claims 11, 14, 15, 36, 37 and 39-41 are rejected over Gunjima, supplemented by the teachings of Van De Ven. The Van De Ven patent describes an LCD projector for producing image beams. At column 3, line 61 – column 4, line 8, the patent indicates that the LCD display is an alternative "image source" to the projection lens (10) shown in the drawings. The projection screen (20) described in the Van De Ven patent is spaced substantially apart from the LCD display (image source 10). Nowhere in the Van De Ven patent is there any teaching or suggestion to incorporate a Fresnel-faceted layer directly with an LCD display device as required in claims 11, 14, 15, 36, 37 and 39-41. The LCD display is just an alternative source of light at element (10). The Fresnel structure (20) shown in Fig. 1 of the Van De Ven patent is not positioned as a surface of an LCD display. Hence, claim 11 defines over the combination of these patents. Claims 14 and 36 require that individual portions or facets of the stepped or ramped surface of the claimed LCD device are convexly or concavely curved. To the extent that the Van De Ven patent discloses microlenses (122) along the surface of the Fresnel structure (20), that teaching does not account for the basic deficiencies of the Van De Ven patent to include an LCD display having an element with one surface which is stepped to form a Fresnel refracting arrangement and another surface having surface relief or texturing. As such, claims 14 and 36 define over the combination of these patents.

Claims 15 and 37 require that the refractive index of the materials which form the sheet (20) includes variations to impart bulk light diffusing properties to the material.

Again, even though the Van De Ven patent discloses light transmitting material with variations of the refractive index, this teaching does not account for the basic deficiencies in the combination of the teachings of the Gunjima and Van De Ven patents to disclose an LCD device which includes a sheet having a surface with surface relief or texturing and another surface which is stepped or ramped in the form of a Fresnel refracting arrangement. Hence, claims 15 and 37 define over the combination of these patents.

Claim 39 is directed to an LCD display which includes an LCD, a Fresnel plate and a back light. Two plates of the LCD are positioned on one side of the Fresnel plate. The Fresnel stepped or ramped lower surface of the Fresnel plate faces the back lighting assembly. The Fresnel stepped or ramped lower surface also includes a semi-reflective or transflective coating. Claim 40 is directed to a similar LCD display. In addition, the LCD display of claim 40 includes a second Fresnel plate having a Fresnel stepped or ramped upper surface that conforms with the lower surface of the upper Fresnel plate. In both cases, the Fresnel plate of claim 39 and the upper Fresnel plate of claim 40 include a semi-reflective or transflective coating. The Gunjima patent fails to teach or suggest an LCD display including an LCD in conjunction with a light transmitting body which has a Fresnel stepped or ramped lower surface which is semi-reflective or transflective. The prism arrays (7 or 39) in the Gunjima patent include no semi-reflective or transflective coating. The polarized light separators (6 or 38) are spaced from the prism arrays (7 or 39) so that the prism arrays can perform their function of redirecting obliquely entered light to be perpendicular to the LCD displays. There is no suggestion in Gunjima to apply the layers (6 or 60) to the underside of the prism arrays (7 or 39). Moreover, the polarized light separators (6 or 38) are not semi-reflective or transflective. Nothing in the Van De Ven patent accounts for these deficiencies in the Gunjima patent. Accordingly, claims 39, 40 and 41 define over the prior art of record.

In view of the foregoing, claims 10-15, 20, 35-37 and 39-41 are believed to define over the prior art of record and be in condition for allowance.

Respectfully submitted,

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